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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Technology Center 2600

In re Patent Application of :

Randall B. METCALF

Serial No: 08/749,766

Filed: November 20, 1996



Group Art Unit: 2747

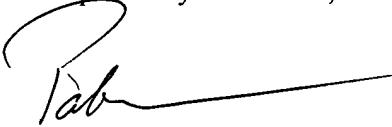
Examiner: M. HARVEY

For: SOUND SYSTEM AND METHOD FOR CAPTURING AND REPRODUCING
SOUNDS ORIGINATING FROM A PLURALITY OF SOUND SOURCES

SUBMISSION OF APPEAL BRIEF

Appellant attaches hereto an Appeal Brief in connection with the above-captioned patent application. A Notice of Appeal was filed on August 25, 2000. A Petition for Extension of Time (of five months) also is attached hereto, along with the requisite fee, thus extending the period for response to **March 26, 2001** (as March 25, 2001 falls on a Sunday). A check covering the requisite fee for filing the Appeal Brief in accordance with 37 C.F.R. §1.17(c), and the fee for the extension of time in accordance with 37 C.F.R. §1.17(a) is enclosed (total **\$1,100.00**).

Respectfully submitted,


Patrick A. Doody
Registration No. 35,022

March 26, 2001

HUNTON & WILLIAMS
1900 K. St., NW
Washington, D.C. 20006-1109
(202) 955-1906

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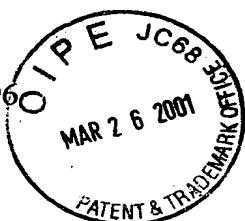
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APPEAL BRIEF

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APPEAL BRIEF

In response to the Office Action dated April 25, 2000, finally rejecting pending claims 1, 2, 4-10, 12-15, 17-19, and 21-55, appellant respectfully requests that the Board of Patent Appeals and Interferences reconsider and withdraw the sole rejection of record, and allow the pending claims, which are attached hereto as an Appendix.

I. REAL PARTY IN INTEREST

The real party in interest is Mr. Randall B. Metcalf, the named inventor of the above-referenced application.

II. RELATED APPEALS AND INTERFERENCES

To the best of appellant's knowledge, there are no related Appeals or Interferences.

III. STATUS OF CLAIMS

Claims 1, 2, 4-10, 12-15, 17-19, and 21-55 are pending in the application. Claims 3, 11, 16, and 20 have been cancelled.

The rejection of claims 1, 2, 4-10, 12-15, 17-19, and 21-55 is appealed.

IV. STATUS OF AMENDMENTS

No amendments to the claims have been filed subsequent to the final rejection dated April 17, 2000.

V. SUMMARY OF INVENTION

Appellant believes that a brief discussion of the background technology, followed by a brief summary of the invention and the problems solved by the present invention, will assist the Board of Patent Appeals and Interferences (hereinafter referred to as "the Board") in appreciating the significant advances made by the present invention.

A. The Background Technology

Sound recording and reproduction systems for multiple sound sources are generally known. There are numerous problems encountered when trying to reproduce sound by use of loudspeakers, especially when trying to precisely record and reproduce sound produced by a plurality of sound sources. A particular problem is referred to as sound staging, which many attempt to correct by using spatial separation techniques. Sound staging is the phenomenon that enables a listener to perceive the apparent physical size and location of a musical presentation. The sound stage includes the physical properties of depth and width. These properties contribute to the ability to listen to an orchestra, for example, and be able to discern the relative position of different sound sources (specification, page 3, lines 17-25).

Many recording systems fail to precisely capture the sound staging effect when recording a plurality of sound sources. One reason for this is the methodology used by many systems. For example, such systems typically use one or more microphones to receive sound waves produced by a plurality of sound sources (e.g., drums, guitar, vocals, etc.) and convert the sound waves to electrical audio signals. When one microphone is used, the sound waves from each of the sound sources are typically mixed (i.e., superimposed on one another) to form a composite signal. When a plurality of microphones are used, the plurality of audio signals are typically mixed (i.e., superimposed on one another) to form a composite signal. The mixing of signals, however, limits the ability to recreate the sound staging of the plurality of sound sources. Many other problems are caused by mixing as well (specification at page 3,

line 25 to page 4, line 13). The system disclosed in Murry, U.S. Patent No. 3,710,034, requires that all signals be mixed since microphones are placed in the corner of the room to capture a plurality of sounds collectively, and not individually or selectively.

Another problem caused by mixing occurs when a mixed audio signal is sent to a loudspeaker. A phenomenon known as masking precludes the precise recreation of original sounds when they are mixed. A particular type of masking can occur when a loudspeaker cone is driven by a composite signal as opposed to an audio signal corresponding to a single sound source (specification at page 5, line 24 to page 6, line 8).

Thus, spatial separation techniques, (those used by spatially arranging a plurality of microphones around a sound source(s)), mix the plurality of sounds and their associated audio signals, as the sounds are superimposed on one another. This limits the ability to recreate the sound staging of the original sounds. Even spatial separation techniques using multiple channels involve mixing audio signals, as each microphone records sounds from the plurality of sound sources. Mixing sounds also inhibits sound reproduction, as it requires the composite audio signals to be played over the same loudspeakers. The effects of masking associated with mixed audio signal reproduction can inhibit precise reproduction of the original sounds.

B. The Present Invention

Appellant's invention overcomes these and other drawbacks by providing methods and apparatus for separately recording a plurality of sound sources produced concurrently by a plurality of sound sources. Further, appellant's invention provides for simultaneously reproducing a plurality of sounds separately recorded or produced by a plurality of sound sources.

According to an embodiment of the invention, the system comprises a plurality of sound sources SS1-SSN for producing a plurality of sounds, and a plurality of sound detectors SD1-SDN, such as microphones, for capturing the sound. Figure 1A is shown below for the Board's convenience. Figure 1A represents a portion of Figure 1 of the present application.

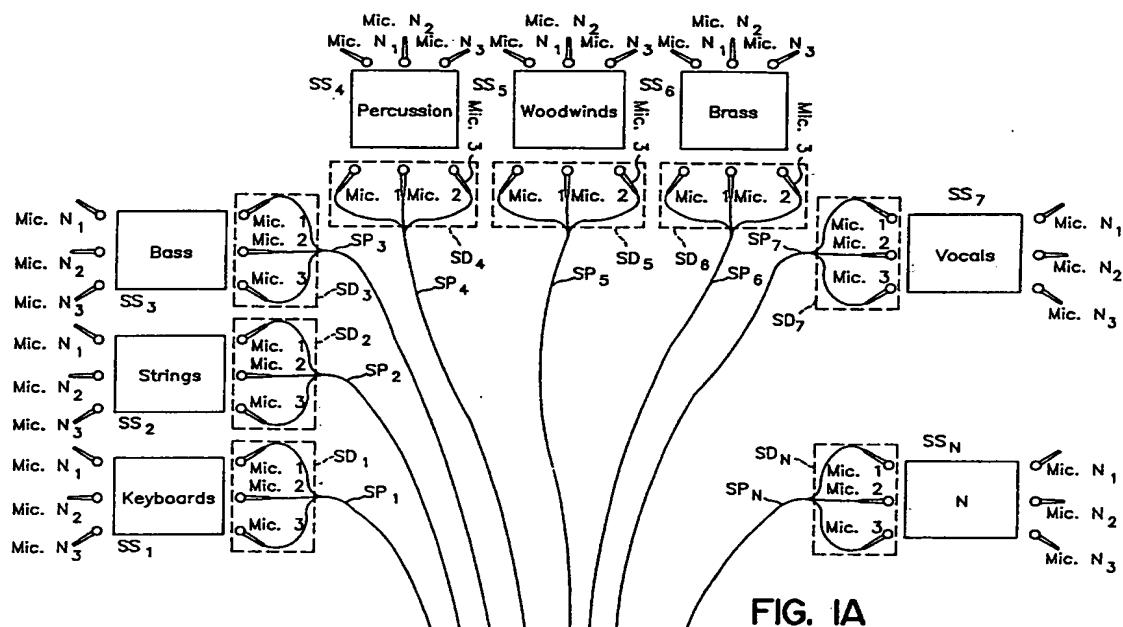


FIG. 1A

As can be seen in the Figure, each sound is converted into a separate audio signal and then conveyed over separate signal paths SP1-SPN to be recorded at, for example recording medium 40, such as an optical disk or a tape (specification at page 11, lines 11-18; *see Figure 1B below*; Figures 1A and 1B make up Figure 1 of the present application).

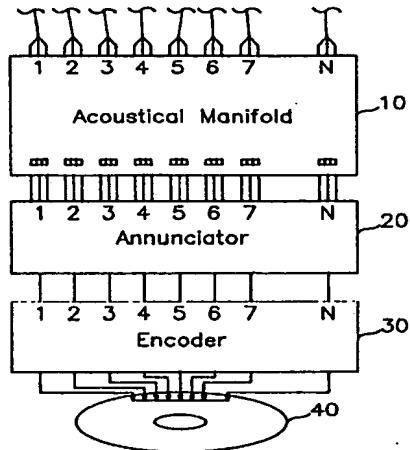


FIG. 1B

When recording is used, the audio signals may be provided to an acoustical manifold 10 and/or an annunciator 20 before being provided to an encoder 30. The acoustical manifold 10 serves as a switching mechanism to distribute the audio signals to a particular signal path (specification at page 12, lines 8-10). The annunciator 20 enables flexibility in handling different numbers of audio signals and signal paths (page 12, lines 10-11).

The audio signals also may be directly transmitted to a sound reproduction system (page 11, lines 18-21). Alternatively, the audio signals recorded on recording medium 40 may be used by the sound reproduction system to reproduce the sounds (page 13, lines 1-4). As shown in Figures 2A and 2B below (Figures 2A and 2B make up Figure 2 of the present application), a reader/decoder 50 reads the stored audio signals from the storage medium 40. The separate audio signals are supplied to an annunciator module 60, to output the appropriate number of audio signals.

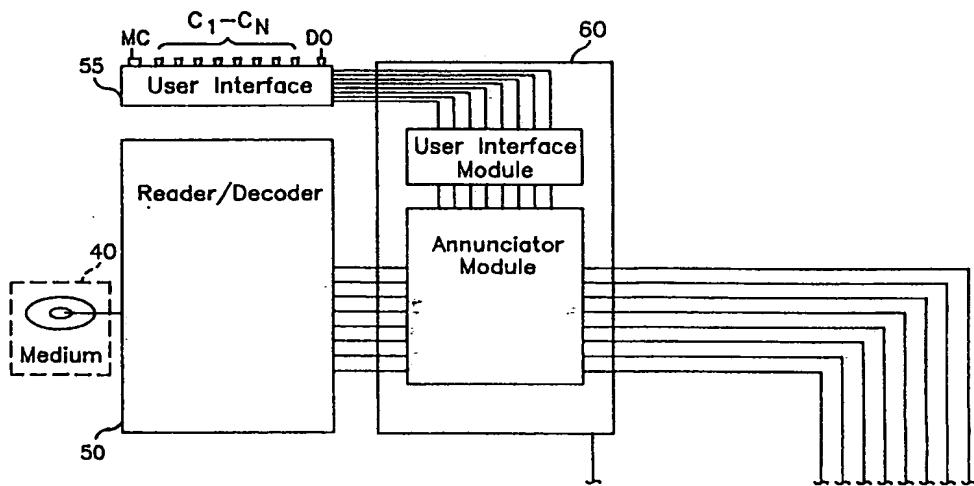


FIG. 2A

Amplifier network 70, shown in Fig. 2B below, which may comprise a plurality of amplifier systems AS1-ASN, separately amplifies each of the audio signals (page 13, lines 24-26). The amplified audio signals are sent to loudspeaker network 80, which comprises a plurality of loudspeaker systems LS1-LSN (page 13, line 28-30). Each loudspeaker separately reproduces each of the signal paths. Each loudspeaker or loudspeaker cluster may be customized for the specific type of sounds produced by the sound source or groups of sound sources associated with the signal path (page 13, lines 5-7).

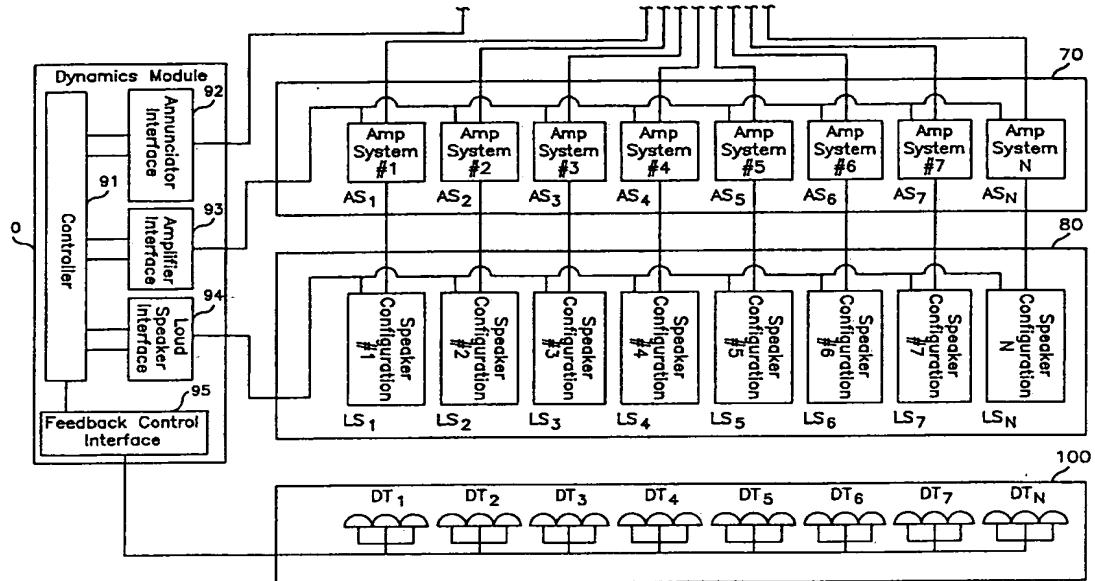


FIG. 2B

In accordance with the present invention, the audio signals are not mixed when they are separately received from the sound sources, or when they are stored for recording. If the system of the invention is used to reproduce already recorded sounds, then the audio signals are not mixed when they are received. Accordingly, the present invention avoids problems that are encountered when audio signals are mixed. Both prior art documents cited by the Examiner require mixing of the audio signals at some point prior to audible reproduction (Murry uses speakers whereas Paroutaud uses transduces to evoke sound from musical instruments).

VI. ISSUES:

There is only one issue on appeal:

(a) Whether claims 1, 2, 4-10, 12-15, 17-19, and 21-55 are patentable under 35 U.S.C. § 103(a) over U.S. Patent No. 3,710,034 to Murry (“Murry”) in view of U.S. Patent No. 5,315,060 to Paroutaud (“Paroutaud”).

VII. GROUPING OF CLAIMS

None of claims 1, 2, 4-10, 12-15, 17-19, and 21-55 stand or fall together. The reasons why each claim is separately patentable are presented in the Arguments section below.

VIII. ARGUMENT

There is only one outstanding rejection against all of the pending claims. Specifically, the Examiner alleges that Murry, when combined with Paroutaud, renders obvious all of the pending claims. Appellant respectfully submits that even if Murry and Paroutaud were combined, both documents require mixing of the audio signals (Murry during receiving the sound the microphones, and Paroutaud during processing, and prior to output to the transducers via amplifier/mixer 115). Thus, the combination would not have rendered obvious the instant claims. Appellant submits further that a person skilled in the art would not have been motivated to combine Murry and Paroutaud in the manner asserted by the Examiner since to do so would frustrate the entire purpose of both documents. Finally, both Murry and Paroutaud are non-analogous art. Accordingly, appellant requests that the Board reconsider the rejection set forth by the Examiner, and allow the pending claims.

A. Summary of the Rejection and the Prior Art Relied Upon in Rejecting the Pending Claims, and Brief Discussion of Misinterpretations by the Examiner

1. The rejection of the Pending Claims over Murry in view of Paroutaud

The final rejection dated April 25, 2000, paper No. 22, ("the Action") rejects pending claims 1, 2, 4-10, 12-15, 17-19, and 21-55 as being unpatentable under 35 U.S.C. §103(a) over Murry in view of Paroutaud. The Action alleges that "Murry discloses a sound system for capturing and reproducing sound produced by a plurality [o]f sound sources comprising: means for separately receiving sound produced by sound sources (56-59); means for converting the separately received sounds to a plurality of separate audio signals without mixing the audio signals (outputs from 56-59). . ." (Action at page 2). Here, the Examiner has erred in interpreting Murry. In Murry, the means for receiving the sound (56-59) produced by sound sources mixes the audio signals at the very outset. Thus, the means for converting the received sounds to a plurality of audio signals converts mixed sounds, necessarily resulting in a mixed audio signal. Murry therefore does not disclose a means for converting sounds to separate audio signals *without mixing the audio signals*, as required in the pending claims.

The Action recognizes that Murry also fails to disclose receiving the sound separately from a plurality of sound sources, an amplification network comprising a plurality of amplifier means, and a dynamic control means for individually controlling the relative amplitude of the separate audio signals for a given power level (Action at page 2). The Examiner relies on Paroutaud as disclosing "a sound system which is comprised of means for separately receiving sound produced by the plurality of sound sources (111 and 114), an amplification network comprising a plurality of amplifier means, . . . and a dynamic controller." (Action age pages 2 and 3). The Examiner concludes that "it would have been obvious to combine Paroutaud's teaching with [Murry] because in a reproduction of music, each microphone could detect the sound of each instrument in the musical instrument and record each instrument onto a separate channel. Also, volume of each signal could be controlled and amplified separately to drive each instrument transducers." (Action at page 3). Thus, it is evident from the statements made in the Action that the combination of references is premised on what "could" or "might" happen, and not what "would" happen. Appellant

respectfully submits that this is improper and runs afoul of well established legal precedent that requires references to be combined for what they “would” teach, not what they “could” teach.

2. U.S. Patent No. 3,710,034 to Murry

U.S. Patent No. 3,710,034 to Murry (“Murry”) discloses a spatial separation technique for recording sound to enable multi-dimensional playback. Microphones are placed in a room to record the sound, with separate channels for each microphone. However, the microphones record sounds from all sound sources within the room. Therefore, Murry mixes the recorded sounds on each channel into one audio signal associated with that channel.

The entire disclosure of Murry is premised on the notion that the sound being received is initially mixed (four microphones in the corners of the room receiving a plurality of sounds). This is why Murry goes to great lengths in attempting to reproduce the sound by placing the speakers in the same arrangement as the microphones, and by modifying the sound to reflect the different dimensions between the recorded room (large auditorium) and the playback room (listening room in a home). Modifying Murry to receive un-mixed sound would defeat the entire purpose of Murry’s invention, and would render the remaining disclosure of Murry meaningless.

3. U.S. Patent No. 5,315,060 to Paroutaud

U.S. Patent No. 5,315,060 to Paroutaud (“Paroutaud”) discloses a system for recording sounds and then reproducing the sounds on actual instruments by driving transducers. The system in Paroutaud is designed for the faithful recreation of a musical performance without the limiting effects of speakers. Paroutaud uses instruments to more accurately reproduce the sound, thereby avoiding loudspeakers.

The entire disclosure of Paroutaud therefore is premised on the absence of loudspeakers. Prior to transmitting the stored audio signals to the respective transducers to drive the respective musical instruments, Paroutaud also requires mixing of the audio signals by processing composite, mixed signals after the multi-track storage apparatus, and by passing them through an amplifier/mixer apparatus numbered 115 in the drawings. To

remove the mixing requirement in Paroutaud, and to use loudspeakers would frustrate the entire purpose thereof, and it would render the remaining disclosure of Paroutaud meaningless.

B. Even if Murry and Paroutaud were Combined as Suggested in the Action, the Combined Teachings Still Would Require Mixing Audio Signals, Which is Expressly Excluded from the Pending Claims

As noted above, Murry's invention is premised entirely on the notion that the sounds that are received are initially mixed. Accordingly, all of Murry's processing procedures after receiving the sounds, or after recording if only playback is concerned, are carried out on mixed signals, and not on separate audio signals. Mixing is not carried out in the present invention, unless desired to do so. The specification sets forth various scenarios in which one might either automatically or manually mix certain audio signals after they have been received (e.g., same frequency, reduced number of speakers, etc.). Specification at page 18, lines 20 *et seq.* To enable such control, however, the initial receipt of the sound is not mixed.

Paroutaud also requires that each of the audio signals be mixed at some point prior to output. Indeed, all of the Figures and description of Paroutaud disclose processing a composite signal after the multi-track storage apparatus, as well as passing the audio signals through an amplifier/mixer 115 (col. 5, lines 18-20, col. 6, lines 11-24, col. 7, lines 1-13, and line 19, col. 11, line 6 and lines 54-61, col. 12, lines 3 and 4, and lines 62 and 63).¹ Even if Murry and Paroutaud were combined, the combined disclosure would require mixing of the audio signals.

The present invention specifically avoids mixing the audio signals, unless desired to do so (page 18, lines 20-30). The specification lists various instances where it may be desirable to mix some of the audio signals, none of which are disclosed in Murry or Paroutaud. Because both Murry and Paroutaud require blanket mixing of all audio signals at some point, their combined teachings still cannot render obvious the present claims. For this reason, appellant respectfully submits that the rejection set forth in the Action fails to render obvious the instant claims, and requests that the Board reverse this rejection.

¹ Paroutaud discloses on col. 11, lines 54-57 that the audio signal (not signals thereby indicating that the signals have been mixed into one signal) passes through amplifier 115, but the Figure referred to explicitly shows the apparatus as an amplifier/mixer 115.

C. Independent Claims 1, 9, 10, 15, 19, 23-35, 42-43, 48 and 52 and All Depending Claims Are Patentable Over the Prior Art

Murry and Paroutaud are non-analogous art to the present invention, as Murry teaches a spatial separation technique while Paroutaud specifically teaches against using loudspeakers. Indeed, the Examiner admitted that Murry is non-analogous art, and that Paroutaud might not be analogous. In the Office Action dated August 31, 1998, paper No. 10, the Examiner admitted that Murry was not analogous to the present invention (“even though Murry is not analogous;” page 3). In the present Action, the Examiner first agrees with appellant that the amendment overcomes the art of record,² and then alleges that “Murry and Paroutaud reference might not be analogous art to the claimed invention” (page 3). If the references are not analogous to the claimed invention, it is hard to imagine how they can render the invention obvious, regardless of how they are combined.

In addition, appellant respectfully submits that there is no motivation to combine the references. Finally, neither Murry nor Paroutaud disclose every element of the claims.

1. Murry and Paroutaud Are Not Analogous Art to the Claimed Invention

Neither Murry nor Paroutaud are analogous art to the claimed invention. Indeed, even the Examiner admits that the “Murry and Paroutaud references might not be analogous art to the claimed invention” (Action at page 3) and that “Murry is not analogous art” (Action dated August 31, 1998, paper No. 10). If the references are not analogous to the present invention, then they are not prior art, and they cannot be used to defeat the patentability of the claimed invention. Non-analogous art is too remote to constitute prior art. *In re Clay*, 966 F.2d 656, 658 (Fed. Cir. 1992).

The art relevant to a consideration of obviousness is the analogous art. *Wang Lab., Inc. v. Toshiba Corp.*, 993 F.2d 858, 864 (Fed. Cir. 1993). Two criteria determine whether a

² Appellant is not sure what the Examiner means by agreeing on page 3 of the Action that the amendment overcomes the art of record, but then stating that the claims still are unpatentable over that very same prior art. Appellant respectfully requests that the record be clarified in this regard since these statements appear to be internally inconsistent.

particular reference is analogous art. First, if the reference is within the inventor's field of endeavor, then it is deemed analogous. *Wang*, 993 F.2d at 864; *Clay*, 966 F.2d at 659. Second, if the reference is reasonably pertinent to the particular problem with which the inventor was involved, it is prior art. *Wang*, 993 F.2d at 864; *Clay*, 966 F.2d at 659. As the Federal Circuit held in *Clay*:

A reference is reasonably pertinent if, even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem. Thus, the purposes of both the invention and the prior art are important in determining whether the reference is reasonably pertinent to the problem the invention attempts to solve. If a reference disclosure has the same purpose as the claimed invention, the reference relates to the same problem, and that fact supports use of that reference in an obviousness rejection. An inventor may well have been motivated to consider the reference when making his invention. If it is directed to a different purpose, the inventor would accordingly have had less motivation or occasion to consider it.

966 F.2d at 659.

Thus, to determine whether a particular reference is within the prior art, the court must first determine the inventor's goals and objectives. As stated in the Background and Objects of the Invention, one of the goals and objects of the present invention is to eliminate problems associated with the spatial separation technique for sound reproduction (page 3, line 17 - page 5, line 11). A field of endeavor for the present invention is to avoid the use of the spatial separation technique, among other things. Murry uses a spatial separation technique for recording sound sources so that a multi-dimensional playback can be achieved. The disclosure of Murry is not within the field of endeavor of the present invention, nor is the disclosure pertinent to the problems addressed by the present invention. Thus, the criteria for analogous art is not present in the disclosure of Murry. Murry therefore is not analogous art to the present invention, as admitted by the Office Action. Accordingly, Murry cannot be used to obviate the claimed invention, and the Examiner's reliance on Murry in this regard is improper.

Paroutaud also is not analogous art to the present invention. Another object of the present invention is to provide a system capable of capturing sound from sound sources and

replaying the sound on a loudspeaker system, "where each loudspeaker system comprises a plurality of loudspeakers or a plurality of groups of loudspeakers (e.g. loudspeaker clusters) customized for reproduction of specific types of sound sources or group(s) of sound sources. Preferably the customization is based at least in part on characteristics of the sounds to be reproduced by the loudspeaker or based on dynamic behavior or groups of sounds."

Specification, page 8, lines 6-8. Thus, the field of endeavor for the present invention involves reproduction on loudspeaker systems of captured sound(s). The present invention is designed to improve the output of a loudspeaker system(s).

Paroutaud, however, is not pertinent to solving these concerns. The invention disclosed in Paroutaud is directed toward eliminating problems associated with conventional loudspeakers, and the entire disclosure of Paroutaud is concerned with eliminating loudspeakers. The output means of Paroutaud involve acoustic music devices driven by transducers. The disclosure in Paroutaud is not within the field of endeavor of the present invention, nor is it pertinent to the problem with which Applicant is involved. Therefore, Paroutaud is not analogous art to the present invention, also as admitted by the Office Action. Accordingly, Paroutaud cannot be used to obviate the claimed invention, and the Examiner's reliance on Paroutaud in this regard is improper.

The technology of both Murry and Paroutaud are not analogous to the present invention as admitted in the Office Action. Therefore, the rejection applying Murry and Paroutaud to claims 1, 2, 3-10, 12-15, 17-19 and 21-55 is improper and impermissible. For at least this reason, the rejection should be reversed and the claims passed to issue.

2. There Is No Suggestion to Combine the References Because to do so Would Frustrate the Entire Purpose of Each of the References

Murry discloses a number of microphones placed in separate locations in a room (preferably in the upper corners). The microphones record *all* of the sound in the room for play back by stereo speakers in similar locations in another room. Accordingly, the initially received sound is mixed, and Murry's entire disclosure is premised on how to process mixed sound signals to achieve as accurate a reproduction as possible. The disclosure of Murry also describes playing back the recorded sound through speakers to replicate the sound in the original room. This is a spatial separation technique.

In sharp contrast to Murry, Paroutaud specifically teaches that stereo speakers are not desired. "The performance sample passage method permits the faithful recreation of a musical performance without the limiting effect of speakers" (Abstract). "There is no fidelity loss and no noise or distortion is introduced at any time since the sounds are emanating from the instrument transducers themselves, not electronic devices and fiber loudspeakers" (col.3, lines 10-15). "Because actual acoustic musical instruments are driven by the MIDI signal, a 'live' acoustic sound is created" (col.5, lines 25-27). Paroutaud then describes how individual instruments, such as stringed instruments (violins, guitars, etc.), wood winds or brass (clarinets, etc.) and drums, are "played" by the method disclosed therein. Only one loud speaker is disclosed in Paroutaud, apparently for use in replicating vocal input(s). However, this is not the preferred embodiment, as Paroutaud describes an "air column within an artificial larynx is oscillated by an electromagnetic vocal cord in conjunction with an air supply (creating female voices, male voices, *etc.*)." Paroutaud, col. 3, lines 37-39. Thus, outputs in Paroutaud involve transducers operating acoustical instruments, thereby teaching away from using loudspeakers. A person of ordinary skill in the art, looking at the disclosure in Paroutaud, would be led away from combining its teachings with Murry.

Additionally, Murry teaches that each microphone in the recording room receives sound from all of the sound sources in the room. The *mixture* of sound sources, as mentioned previously, is referred to as spatial separation, and it is the fundamental basis upon which Murry bases its invention. Paroutaud, however, teaches that each sound source is separately recorded, but that the signals are then mixed into composite signals, and finally fed through mixer 115. The system used in Paroutaud is not designed for the spatial separation technique. One of ordinary skill in the art would not be motivated to combine the invention of Paroutaud with the invention of Murry since to do so would frustrate the entire purpose of Murry.

In a similar fashion, Murry is concerned with playback on loudspeakers, whereas Paroutaud specifically teaches not to use loudspeakers for all of the sound. Again, one of ordinary skill in the art would not be motivated to combine the invention of Paroutaud with the invention of Murry since to do so would frustrate the entire purpose of Paroutaud.

Finally, the disclosures of Murry, which requires receiving mixed sound and using loudspeakers, and Paroutaud, which requires receiving un-mixed sound and not using

loudspeakers, clearly are diametrically opposed teachings that teach away from any combination thereof.

In *In re Hedges*, 783, F.2d 1038, 1041, 228 USPQ 685, 687, (Fed. Cir. 1986), the U.S. Court of Appeals for the Federal Circuit stated that “the prior art as a whole must be considered. The teachings are to be viewed as they would have been viewed by one of ordinary skill.” The court also stated that “[i]t is impermissible within the framework of section 103 to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art” (quoting *In re Wesslau*, 353 F.2d 238, 241, 147 USPQ 391, 393 (CCPA, 1965)). The entire disclosure of Murry and Paroutaud must be examined to determine what the references would suggest to one of ordinary skill in the art. As noted above, when examining their entire disclosures, Murry and Paroutaud teach away from combining the two references.

The Office Action has not identified any suggestion in Murry, Paroutaud, or elsewhere that would lead one of ordinary skill in the art to combine Murry and Paroutaud in view of their express teachings to the contrary. For at least these reasons, claims 1, 2, 4-10, 12-15, 17-19 and 21-55 are patentable over Murry in view of Paroutaud.

3. Murry and Paroutaud Do Not Disclose Every Recitation of the Claims and Hence, any Combination of these two Documents Fails to Render Obvious the Present Claims.

Independent claim 1 recites “an amplification network comprising a plurality of amplifier means, with separate amplifier means for separately amplifying each of the separate audio signals.” Neither Murry nor Paroutaud discloses separate amplifier means for each of the separate audio signals. Paroutaud discloses one amplifier/mixer 115, not a plurality of amplifier means. The Office Action admits that Murry does not disclose an amplification network comprising a plurality of amplifier means. Action at page 2.

Claim 1 further recites “a loudspeaker network comprising a plurality of loudspeaker means, with separate loudspeaker means for reproducing the separately amplified audio signals.” Because the audio signals of Murry are not separately amplified, such signals cannot be reproduced on separate loudspeaker means. Therefore, neither Murry nor Paroutaud discloses this element of claim 1. Thus, for at least these reasons, the combination

of Murry and Paroutaud fails to disclose every element of claim 1, or the other independent claims.

Further, independent claims 1, 9, 10, 35, 42, 43, 48 and 52 recite “separately capturing” or “means for separately receiving” sounds produced by a plurality of sound sources. As noted in the Office Action, “Murry does not disclose that the receiving sounds are produced by the plurality of sound sources.” Thus, Murry does not disclose every recitation of claims 1, 9, 10, 35, 42, 43, 48 and 52 and the claims that depend therefrom.

Independent claims 23-29 recite “each receiving means associated with a single sound source.” This recitation is not disclosed in Murry. As noted above, Murry discloses the use of a spatial separation technique to capture sound. Microphones are placed in various locations in a recording room. Each microphone then receives sound from each source in the room, thereby each microphone is associated with a number of sound sources. Murry does not disclose the recitation of “each receiving means associated with a single sound source.”

Independent claims 15, 19, 30-34, 48 and 52 recite “converting each of the plurality of sounds to an audio signal” (or means for such a conversion), while independent claims 1, 9, 23-28, 35 and 42 recite “converting the separately received sounds to a plurality of separate audio signals without mixing the audio signals” (or means for such a conversion). Murry does not disclose this recitation. Each sound in Murry is not converted into one audio signal for that microphone. Rather, all of the sounds received by a microphone are converted into one audio signal for that microphone. Therefore, Murry does not disclose at least this recitation of the claims.

Claims 35-55 recite “designating each of the plurality of received sounds based on one or more of the sonic characteristics” (or means for such a designation). There is no disclosure of any type of designation based on sonic characteristics in Murry. Therefore, Murry does not disclose at least this recitation of the claims.

For at least these reasons, independent claims 1, 9, 10, 15, 19, 23-35, 42, 43, 48 and 52, and the claims that depend therefrom, are patentable over the art of record. Further, these claims are separately patentable over the prior art for the reasons described above.

Paroutaud discloses a line 96 to couple microphones 112 to Multi-Track Storage 113, a line 21 to connect Data Extractor 117 to MIDI Converter 118, and a line 24 to connect Transducer Drivers 120 to Multi-Track Amplifier/Mixer 115. Each line is a single line, as

Paroutaud refers to both a line (*i.e.* a single line), for example, line 26 (col. 7, 1.4), and lines (*i.e.* multiple lines), for example, lines 25 (col. 7, 1.11). Paroutaud therefore knew how to differentiate between multiple and separate signals (e.g., multiple lines), and a composite, mixed signal (e.g., only one line). Paroutaud discloses in a number of instances the use of a single line to transmit all of the audio signals. Accordingly, when Paroutaud discloses these audio signals being simultaneously transmitted across a line, the audio signals would have to mix, unless a multiplexer were used. Paroutaud is completely silent with respect to the use of a multiplexer, and thus, Paroutaud would be interpreted as disclosing mixing audio signals between the respective component parts. Independent claims 1, 9, 10, 19, 23-29, 32, 33-35, 42 and 43 of the present invention recite “without mixing the audio signals” on one or more occasions within the claim. Therefore, at least this recitation is not disclosed in Paroutaud.

Claims 23-34 recite audio signals that act separately and simultaneously. Claims 23 and 26 recite “simultaneously and separately storing” audio signals. Claims 24 and 31 recite “simultaneously and separately retrieving” audio signals. Claims 25, 28, 32, and 34 recite “simultaneously and separately amplifying” audio signals. Claim 27 recites “reading the stored audio signals from the recording medium simultaneously.” Claim 29 recites “simultaneously amplifying” audio signals. Claim 30 recites “simultaneously and separately recording” audio signals. Claim 33 recites “simultaneously and separately transmitting” audio signals. If audio signals in Paroutaud are transmitted through the system simultaneously, the audio signals mix when using a single line. Therefore, if the signals in Paroutaud act simultaneously, this disclosure fails to meet the claim recitation of “without mixing audio signals.”

Additionally, Paroutaud discloses a Multi-Track Amplifier/Mixer 115. The audio signals are transmitted through the Amplifier/Mixer 115 to a plurality of outputs. As stated above, the claimed invention does not mix the audio signals, unless specifically desirable to do so. Thus, Paroutaud does not disclose this recitation of the claims.

Paroutaud also fails to disclose a dynamic control means, as recited in independent claims 1, 9, 15, 19 and 23-28. The Office Action asserts that automatic tracking/extraction device 117 is “a dynamic controller for individually controlling the relative amplitude of the separate audio signals for a given power level based on predetermined criteria.” There is no disclosure in Paroutaud of dynamically controlling the relative amplitude of separate signals.

Data extractor 117 extracts multi-track pitch/frequency/performance data. (Col. 6, lines 12-13). Further, it appears data extractor 117 may extract individual instruments signals. (Col. 2, lines 30-31). None of these disclosures, however, describes a dynamic controller “for individually controlling the relative amplitude of the separate audio signals for a given power level based on predetermined criteria.” Therefore, Paroutaud fails to disclose this element of the claims.

Independent claims 35, 42, 43, 48 and 52 recite “designating each of the plurality of received sounds based on one or more of the sonic characteristics.” There is no disclosure of any type of designation based on sonic characteristics in Paroutaud. Therefore, Paroutaud does not disclose at least this recitation of the claims.

For at least these reasons, independent claims 1, 9, 10, 15, 19, 23-35, 42, 43, 48 and 52, and the claims that depend therefrom, are patentable over the art of record. Further, these claims are separately patentable for the reasons described above.

D. Each Claim Is Separately Patentable

As stated above, none of the claims stand or fall together. Independent claims 1, 9, 10, 15, 19, 24-35, 42, 43, 48, and 52 are separately patentable for all of the reasons set forth above. Specifically, each of these independent claims include recitations that are neither disclosed nor suggested by Murry and Paroutaud. Each of dependent claims also is separately patentable for the reasons noted above, and for the additional reasons set forth below.

Claim 2 is separately patentable because it recites that each separate loudspeaker means comprises one or more loudspeakers or groups of loudspeakers. Murry and Paroutaud fail to disclose this feature of the claimed invention. Accordingly, claim 2 is separately patentable over the prior art of record.

Claim 4 recites that each of the plurality of sound sources comprises a group of individual sound sources. Murry and Paroutaud fail to disclose this feature of the claimed invention because Murry only discloses one individual sound source, and Paroutaud only discloses individual sound sources, and not a group of individual sound sources.

Accordingly, claim 4 is separately patentable over the prior art of record.

Claim 5 recites that each amplification means is customized for the audio signal to be amplified. Murry does not disclose separate amplification means (as recognized by the Examiner), and Paroutaud fails to disclose customizing each amplification means. Accordingly, claim 5 is separately patentable over the prior art of record.

Claim 6 is separately patentable because it recites that each amplification means and loudspeaker means is separately controllable. Murry does not disclose a plurality of amplification means, and Paroutaud fails to disclose separately controlling each amplification means and loudspeaker means. Accordingly, claim 6 is separately patentable over the prior art of record.

Claim 7 recites that the loudspeakers are customized by one or more of the types of loudspeakers, the configuration of the loudspeakers, and the directionality of the loudspeakers. Murry fails to disclose customizing the type of loudspeaker, configuration, and directionality of the loudspeakers. Paroutaud fails to even disclose the use of loudspeakers. Accordingly, claim 7 is separately patentable over the prior art of record.

Claim 8 is separately patentable because it recites one or more amplifiers or groups of amplifiers being customized for the audio signal to be amplified. As recognized by the Examiner, Murry does not disclose a plurality of amplifiers. Paroutaud fails to disclose any customization of the amplifier(s) disclosed therein, if one could even interpret Paroutaud as disclosing a plurality of amplifiers. Accordingly, claim 8 is separately patentable over the prior art of record.

Claim 12 also is separately patentable by reciting each separate loudspeaker means comprising one or more loudspeakers or groups of loudspeakers. Paroutaud teaches directly away from the use of any loudspeaker, let alone a group of loudspeaker. Murry only discloses one loudspeaker means that comprises four speakers, each playing mixed audio signals. Accordingly, claim 12 is separately patentable over the prior art of record.

Claim 13 recites that each of the amplification means is separately controllable, and therefore is separately patentable. Murry does not disclose a plurality of amplification means, and Paroutaud fails to disclose separately controlling each amplification means. Murry and Paroutaud therefore fail to disclose this feature of the claimed invention. Accordingly, claim 13 is separately patentable over the prior art of record.

Claim 14 recites that each loudspeaker means is separately controllable, and therefore is separately patentable. Murry does not disclose separately controlling each loudspeaker means (only one loudspeaker means is disclosed). Paroutaud fails to even disclose the use of one loudspeaker means. Accordingly, claim 14 is separately patentable over the prior art of record.

Claim 17 is separately patentable, as it recites separately controlling each of the amplification means. Murry does not disclose a plurality of amplification means, and Paroutaud fails to disclose separately controlling each amplification means. Murry and Paroutaud therefore fail to disclose this feature of the claimed invention. Accordingly, claim 17 is separately patentable over the prior art of record.

Claim 18 recites that each of the loudspeaker means is separately controllable. Thus, claim 18 is separately patentable. Murry does not disclose separately controlling each loudspeaker means (only one loudspeaker means is disclosed). Paroutaud fails to even disclose the use of one loudspeaker means. Accordingly, claim 18 is separately patentable over the prior art of record.

Claim 21 is separately patentable, as it recites separately controlling each of the amplification means. Murry does not disclose a plurality of amplification means, and Paroutaud fails to disclose separately controlling each amplification means. Murry and Paroutaud fail to disclose this feature of the claimed invention. Accordingly, claim 21 is separately patentable over the prior art of record.

Claim 22 recites that each of the loudspeaker means is separately controllable. Murry does not disclose separately controlling each loudspeaker means (only one loudspeaker means is disclosed). Paroutaud fails to even disclose the use of one loudspeaker means. Murry and Paroutaud therefore fail to disclose this feature of the claimed invention. Accordingly, claim 22 is separately patentable over the prior art of record.

Claim 36 recites that the separate loudspeaker means comprise one or more loudspeakers or groups of loudspeakers which are customized based on the sonic characteristics of the one or more plurality of sound sources. Neither Murry nor Paroutaud disclose customizing the loudspeakers (Paroutaud does not even disclose the use of loudspeakers). Accordingly, claim 36 is separately patentable over the prior art of record.

Claim 37 is also separately patentable by reciting the plurality of sound sources being comprised of a group of sound sources. Murry and Paroutaud fail to disclose this feature of the claimed invention. Accordingly, claim 37 is separately patentable over the prior art of record.

Claim 38 recites an amplification means that is customized based on the sonic characteristics of the one or more plurality of sound sources. Neither Murry nor Paroutaud disclose customizing the amplification means based on any characteristic, let alone the sonic characteristics of the one or more plurality of sound sources. Therefore, claim 38 is separately patentable over the prior art of record.

Claim 39 is separately patentable, because it recites that each amplification means and loudspeaker means is separately controllable. Murry does not disclose a plurality of amplification means, and Paroutaud fails to disclose separately controlling each amplification means. Murry and Paroutaud therefore fail to disclose this feature of the claimed invention. Accordingly, claim 39 is separately patentable over the prior art of record.

Claim 40 recites that the loudspeakers are customized by one or more of the types of loudspeakers, the configuration of the loudspeakers, and the directionality of the

loudspeakers. Murry fails to disclose customizing the type of loudspeaker, configuration, and directionality of the loudspeakers. Paroutaud fails to even disclose the use of loudspeakers. Accordingly, claim 7 is separately patentable over the prior art of record.

Claim 41 is separately patentable, as it recites that two or more of the separately received audio signals can be combined to share a designated amplification means or loudspeaker means. Murry and Paroutaud fail to disclose this feature of the claimed invention. Accordingly, claim 41 is separately patentable over the prior art of record.

Claim 44 is also separately patentable, as it recites that the plurality of sound sources comprise a group of sound sources. Murry and Paroutaud fail to disclose this feature of the claimed invention. Accordingly, claim 44 is separately patentable over the prior art of record.

Claim 45 recites that each of the amplification means is separately controllable. The Examiner has recognized that Murry does not disclose a plurality of amplification means, and Paroutaud fails to disclose separately controlling each amplification means. Murry and Paroutaud fail to disclose this feature of the claimed invention. Accordingly, claim 45 is separately patentable over the prior art of record.

Claim 46 recites that each of the loudspeaker means is separately controllable. Murry does not disclose separately controlling each loudspeaker means (only one loudspeaker means is disclosed). Paroutaud fails to even disclose the use of one loudspeaker means. Murry and Paroutaud therefore fail to disclose this feature of the claimed invention. Accordingly, claim 46 is separately patentable over the prior art of record.

Claim 47 is separately patentable, because it recites two or more of the separately received audio signals being combined to share a designated amplification means or loudspeaker means. Murry and Paroutaud fail to disclose this feature of the claimed invention. Accordingly, claim 47 is separately patentable over the prior art of record.

Claim 49 recites that each of the amplification means is separately controllable. The Examiner has recognized that Murry does not disclose a plurality of amplification means, and Paroutaud fails to disclose separately controlling each amplification means. Murry and Paroutaud fail to disclose this feature of the claimed invention. Accordingly, claim 49 is separately patentable over the prior art of record.

Claim 50 is separately patentable by reciting each of the loudspeaker means being separately controllable. Murry does not disclose separately controlling each loudspeaker means. Paroutaud fails to even disclose the use of one loudspeaker means. Murry and Paroutaud therefore fail to disclose this feature of the claimed invention. Accordingly, claim 50 is separately patentable over the prior art of record.

Claim 51 is separately patentable, as it recites that two or more of the separately received audio signals can be combined to share a designated amplification means or loudspeaker means. Murry and Paroutaud fail to disclose this feature of the claimed invention. Accordingly, claim 51 is separately patentable over the prior art of record.

Claim 53 recites that each of the amplification means is separately controllable. Murry and Paroutaud fail to disclose this feature of the claimed invention. Accordingly, claim 53 is separately patentable over the prior art of record.

Claim 54 recites that each of the loudspeaker means is separately controllable, and thus is also separately patentable. Murry and Paroutaud fail to disclose this feature of the claimed invention. Accordingly, claim 54 is separately patentable over the prior art of record.

Claim 55 recites that two or more of the separately received audio signals can be combined to share a designated amplification means or loudspeaker means. Murry and Paroutaud fail to disclose this feature of the claimed invention. Accordingly, claim 55 is separately patentable over the prior art of record.

IX. CONCLUSION

In view of the foregoing, appellant respectfully requests that the Board reverse the prior art rejection set forth in the Action, and allow all of the pending claims.

Respectfully submitted,



Patrick A. Doody
Registration No. 35,022

March 26, 2001

HUNTON & WILLIAMS
1900 K. St., NW
Washington, D.C. 20006-1109
(202) 955-1906

APPENDIX

CLAIMS

1. A sound system for capturing and reproducing sounds produced by a plurality of sound sources, comprising:
 - means for separately receiving sounds produced by the plurality of sound sources;
 - means for converting the separately received sounds to a plurality of separate audio signals without mixing the audio signals;
 - means for separately storing the plurality of separate audio signals without mixing the audio signals;
 - means for separately retrieving the stored audio signals;
 - an amplification network comprising a plurality of amplifier means, with separate amplifier means for separately amplifying each of the separate audio signals;
 - a loudspeaker network comprising a plurality of loudspeaker means, with separate loudspeaker means for reproducing the separately amplified audio signals; and
 - a dynamic control means for individually controlling the relative amplitude of the separate audio signals for a given power level based on predetermined criteria.
2. The sound system of claim 1, wherein said separate loudspeaker means comprises a one or more loudspeakers or groups of loudspeakers.
4. The sound system of claim 1 wherein each of the plurality of sound sources comprises a group of individual sound sources.
5. The sound system of claim 1 wherein each of the amplification means is customized for the audio signals to be amplified by that amplifier means.
6. The sound system of claim 1 wherein each of the amplification means and loudspeaker means is separately controllable.

7. The sound system of claim 2, wherein the customization of the loudspeakers includes one or more of the types of loudspeakers, the configuration of the loudspeakers, or the directionality of the loudspeakers.

8. The sound system of claim 1, wherein each amplifier means comprises a one or more amplifiers or groups of amplifiers which are customized for amplification of the type of audio signals to be amplified by each amplifier or group of amplifiers.

9. A sound system for recording and reproducing sounds produced by a plurality of sound sources, comprising:

means for separately receiving sounds produced by the plurality of sound sources;

means for converting the separately received sounds to a plurality of separate audio signals without mixing the audio signals;

a recording medium;

means for separately storing the plurality of separate audio signals on the recording medium without mixing the audio signals;

means for reading the stored audio signals from the recording medium and recreating the plurality of separate audio signals;

an amplification network comprising a plurality of amplifier means, with separate amplifier means for separately amplifying each of the recreated plurality of separate audio signals;

a loudspeaker network comprising a plurality of loudspeaker means, with separate loudspeaker means for separately reproducing the amplified audio signals; and

a dynamic control means for individually controlling the relative amplitudes of the separate audio signals for a given system power level based on predetermined criteria.

10. A system for reproducing sounds produced by a plurality of sound sources, comprising:

means for separately receiving a plurality of audio signals produced by the plurality of sounds sources without mixing the audio signals;

an amplification network comprising a plurality of amplifier means, with separate amplifier means for amplifying each of the plurality of audio signals;

a loudspeaker network comprising a plurality of customized loudspeaker means, with separate loudspeaker means for separately reproducing each of the separately amplified audio signals; and

a dynamic control means for individually controlling the relative amplitudes of the separate audio signals for a given system power level based on predetermined criteria.

12. The sound system of claim 10 wherein each of the plurality of sound sources comprises a group of individual sound sources.

13. The sound system of claim 10 wherein each of the amplification means is separately controllable.

14. The sound system of claim 10 wherein each of the loudspeaker means is separately controllable.

15. A method of recording and reproducing sound comprising the steps of:

capturing a plurality of sounds from a plurality of sound sources;

converting each of the plurality of sounds to an audio signal;

separately recording each of the audio signals;

separately retrieving each of the audio signals;

separately amplifying each of the plurality of audio signals;

separately supplying each of the audio signals to a loudspeaker system to reproduce the original plurality of sounds; and

a dynamic control means for individually controlling the relative amplitudes of the separate audio signals for a given system power level based on predetermined criteria.

17. The method of claim 15 further comprising the step of separately controlling each of the amplification means.

18. The method of claim 15 further comprising the step of separately controlling each of the loudspeaker means.

19. A method of sound reproduction comprising the steps of:

capturing a plurality of sounds from a plurality of sound sources;

converting each of the plurality of sounds to an audio signal;

separately transmitting each of the audio signals without mixing the audio signals;

separately amplifying each of the plurality of audio signals;

separately supplying each of the audio signals to a loudspeaker system to reproduce the original plurality of sounds; and

a dynamic control means for individually controlling the relative amplitudes of the separate audio signals for a given system power level based on predetermined criteria.

21. The method of claim 19 further comprising the step of separately controlling each of the amplification means.

22. The method of claim 19 further comprising the step of separately controlling each of the loudspeaker means.

23. A sound system for capturing and reproducing sounds produced by a plurality of sound sources, comprising:

means for separately receiving sounds produced by the plurality of sound sources, each receiving means associated with a single sound source;

means for converting the separately received sounds to a plurality of separate audio signals without mixing the audio signals;

means for simultaneously and separately storing the plurality of separate audio signals without mixing the audio signals;

means for separately retrieving the stored audio signals;

an amplification network comprising a plurality of amplifier means, with separate amplifier means for separately amplifying each of the separate audio signals; and

a loudspeaker network comprising a plurality of loudspeaker means, with separate loudspeaker means for reproducing the separately amplified audio signals, and

a dynamic control means for individually controlling the relative amplitudes of the separate audio signals for a given system power level based on predetermined criteria.

24. A sound system for capturing and reproducing sounds produced by a plurality of sound sources, comprising:

means for separately receiving sounds produced by the plurality of sound sources, each receiving means being associated with a single sound source;

means for converting the separately received sounds to a plurality of separate audio signals without mixing the audio signals;

means for separately storing the plurality of separate audio signals without mixing the audio signals;

means for simultaneously and separately retrieving a plurality of the stored audio signals;

an amplification network comprising a plurality of amplifier means, with separate amplifier means for separately amplifying each of the separate audio signals;

a loudspeaker network comprising a plurality of loudspeaker means, with separate loudspeaker means for reproducing the separately amplified audio signals, and

a dynamic control means for individually controlling the relative amplitudes of the separate audio signals for a given system power level based on predetermined criteria.

25. A sound system for capturing and reproducing sounds produced by a plurality of sound sources, comprising:

means for separately receiving sounds produced by the plurality of sound sources, each receiving means being associated with a single sound source;

means for converting the separately received sounds to a plurality of separate audio signals without mixing the audio signals;

means for separately storing the plurality of separate audio signals without mixing the audio signals;

means for separately retrieving a plurality of the stored audio signals;

an amplification network comprising a plurality of amplifier means, with separate amplifier means for simultaneously and separately amplifying each of the separate audio signals;

a loudspeaker network comprising a plurality of loudspeaker means, with separate loudspeaker means for reproducing the separately amplified audio signals, and

a dynamic control means for individually controlling the relative amplitudes of the separate audio signals for a given system power level based on predetermined criteria.

26. A sound system for recording and reproducing sounds produced by a plurality of sound sources, comprising:

means for separately receiving sounds produced by the plurality of sound sources, each receiving means being associated with a single sound source;

means for converting the separately received sounds to a plurality of separate audio signals without mixing the audio signals;

a recording medium;

means for simultaneously and separately storing the plurality of separate audio signals on the recording medium without mixing the audio signals;

means for reading the stored audio signals from the recording medium and recreating the plurality of separate audio signals;

an amplification network comprising a plurality of amplifier means, with separate amplifier means for separately amplifying each of the recreated plurality of separate audio signals;

a loudspeaker network comprising a plurality of loudspeaker means, with separate loudspeaker means for separately reproducing the amplified audio signals; and

a dynamic control means for individually controlling the relative amplitude of the separate audio signals for a given power level based on predetermined criteria.

27. A sound system for recording and reproducing sounds produced by a plurality of sound sources, comprising:

means for separately receiving sounds produced by the plurality of sound sources, each receiving means being associated with a single sound source;

means for converting the separately received sounds to a plurality of separate audio signals without mixing the audio signals;

a recording medium;

means for separately storing the plurality of separate audio signals on the recording medium without mixing the audio signals;

means for reading the stored audio signals from the recording medium simultaneously and recreating the plurality of separate audio signals;

an amplification network comprising a plurality of amplifier means, with separate amplifier means for separately amplifying each of the recreated plurality of separate audio signals;

a loudspeaker network comprising a plurality of loudspeaker means, with separate loudspeaker means for separately reproducing the amplified audio signals; and

a dynamic control means for individually controlling the relative amplitude of the separate audio signals for a given power level based on predetermined criteria.

28. A sound system for recording and reproducing sounds produced by a plurality of sound sources, comprising:

means for separately receiving sounds produced by the plurality of sound sources, each receiving means being associated with a single sound source;

means for converting the separately received sounds to a plurality of separate audio signals without mixing the audio signals;

a recording medium;

means for separately storing the plurality of separate audio signals on the recording medium without mixing the audio signals;

means for reading the stored audio signals from the recording medium and recreating the plurality of separate audio signals;

an amplification network comprising a plurality of amplifier means, with separate amplifier means for simultaneously and separately amplifying each of the recreated plurality of separate audio signals;

a loudspeaker network comprising a plurality of loudspeaker means, with separate loudspeaker means for separately reproducing the amplified audio signals; and

a dynamic control means for individually controlling the relative amplitudes of the separate audio signals for a given system power level based on predetermined criteria.

29. A system for reproducing sounds produced by a plurality of sound sources, comprising:

means for separately receiving a plurality of audio signals produced by the plurality of sound sources without mixing the audio signals, each receiving means being associated with a single sound source;

an amplification network comprising a plurality of amplifier means, with separate amplifier means for simultaneously amplifying each of the plurality of audio signals;

a loudspeaker network comprising a plurality of loudspeaker means, with separate loudspeaker means for separately reproducing each of the separately amplified audio signals; and

a dynamic control means for individually controlling the relative amplitudes of the separate audio signals for a given system power level based on predetermined criteria.

30. A method of recording and reproducing sound comprising the steps of:

capturing a plurality of sounds from a plurality of sound sources;

converting each of the plurality of sounds to an audio signal;

simultaneously and separately recording each of the audio signals;

separately retrieving each of the audio signals;

separately amplifying each of the plurality of audio signals;

separately supplying each of the audio signals to a loudspeaker system to reproduce the original plurality of sounds, and

a dynamic control means for individually controlling the relative amplitudes of the separate audio signals for a given system power level based on predetermined criteria.

31. A method of recording and reproducing sound comprising the steps of:
capturing a plurality of sounds from a plurality of sound sources;
converting each of the plurality of sounds to an audio signal;
separately recording each of the audio signals;
simultaneously and separately retrieving each of the audio signals;
separately amplifying each of the plurality of audio signals;
separately supplying each of the audio signals to a loudspeaker system to reproduce the original plurality of sounds, and
a dynamic control means for individually controlling the relative amplitudes of the separate audio signals for a given system power level based on predetermined criteria.
32. A method of recording and reproducing sound comprising the steps of:
capturing a plurality of sounds from a plurality of sound sources;
converting each of the plurality of sounds to an audio signal;
separately recording each of the audio signals;
separately retrieving each of the audio signals;
simultaneously and separately amplifying each of the plurality of audio signals;
separately supplying each of the audio signals to a loudspeaker system to reproduce the original plurality of sounds, and
a dynamic control means for individually controlling the relative amplitudes of the separate audio signals for a given system power level based on predetermined criteria.
33. A method of sound reproduction comprising the steps of:
capturing a plurality of sounds from a plurality of sound sources;
converting each of the plurality of sounds to an audio signal;
simultaneously and separately transmitting each of the audio signals without mixing the audio signals;
separately amplifying each of the plurality of audio signals;
separately supplying each of the audio signals to a loudspeaker system to reproduce the original plurality of sounds, and

a dynamic control means for individually controlling the relative amplitudes of the separate audio signals for a given system power level based on predetermined criteria.

34. A method of sound reproduction comprising the steps of:

capturing a plurality of sounds from a plurality of sound sources;

converting each of the plurality of sounds to an audio signal;

separately transmitting each of the audio signals without mixing the audio signals;

simultaneously and separately amplifying each of the plurality of audio signals; and

separately supplying each of the audio signals to a loudspeaker system to reproduce the original plurality of sounds, and

a dynamic control means for individually controlling the relative amplitudes of the separate audio signals for a given system power level based on predetermined criteria.

35. A sound system for capturing and reproducing sounds produced by a plurality of sound sources, comprising:

means for separately receiving sounds produced by a plurality of sound sources, each sound source having separate sonic characteristics;

means for designating each of the plurality of received sounds based on one or more of the sonic characteristics corresponding to each sound source;

means for converting the separately received sounds to a plurality of separate audio signals without mixing the audio signals;

means for separately storing the plurality of separate audio signals without mixing the audio signals;

means for separately retrieving the stored audio signals;

an amplification network comprising a plurality of amplifier means, with separate amplifier means for separately amplifying each of the separate audio signals; and

a loudspeaker network comprising a plurality of loudspeaker means, with separate loudspeaker means for reproducing the separately amplified audio signals.

36. The sound system of claim 35, wherein said separate loudspeaker means comprises one or more loudspeakers or groups of loudspeakers which are customized based

on the sonic characteristics of one or more of the plurality of sounds sources designated to be reproduced by each loudspeaker or group of loudspeakers.

37. The sound system of claim 35 wherein each of the plurality of sound sources comprises a group of individual sound sources.

38. The sound system of claim 35 wherein each of the amplification means is customized based on the sonic characteristics of one or more plurality of sound sources designated to be amplified by that amplifier means.

39. The sound system of claim 35 wherein each of the amplification means and loudspeaker means is separately controllable.

40. The sound system of claim 36 wherein the customization of the loudspeakers includes one or more of audio characteristics of the loudspeakers, the configuration of the loudspeakers, or the directionality of the loudspeakers.

41. The sound system of claim 35, wherein two or more of the plurality of separately received audio signals can be combined to share a designated amplification means or loudspeaker means.

42. A sound system for recording and reproducing sounds produced by a plurality of sound sources, each sound source having unique sonic source characteristics, the system comprising:

means for separately receiving sounds produced by the plurality of sound sources,

means for designating each of the plurality of received sounds based on the sonic characteristics of each of the corresponding sound sources;

means for converting the separately received sounds to a plurality of separate audio signals without mixing the audio signals;

a recording medium;

means for separately storing the plurality of separate audio signals on the recording medium without mixing the audio signals;

means for separately retrieving the stored audio signals;

an amplification network comprising a plurality of amplifier means, with separate amplifier means for separately amplifying each of the separate audio signals;

a loudspeaker network comprising a plurality of loudspeaker means, with separate loudspeaker means for reproducing separately the amplified audio signals; and

a dynamic controller for separately dynamically controlling the loudspeaker network and the amplification network according to predetermined control schemes that take into account the change in dynamic relationship among the separate sounds being reproduced based on changes in output levels of the audio signal.

43. A system for reproducing sounds produced by a plurality of sound sources, comprising:

means for separately receiving a plurality of audio signals produced by the plurality of sound sources without mixing the audio signals, each sound source having separate sonic characteristics;

means for designating each of the plurality of received sounds based on one or more of the sonic characteristics corresponding to each sound source;

means for transmitting the plurality of separately received audio signals without mixing the audio signals;

an amplification network comprising a plurality of amplifier means, with separate amplifier means for amplifying each of the plurality of audio signals; and

a loudspeaker network comprising a plurality of customized loudspeaker means, with separate loudspeaker means for separately reproducing each of the separately amplified audio signals.

44. The sound system of claim 43 wherein each of the plurality of sound sources comprises a group of individual sound sources.

45. The sound system of claim 43 wherein each of the amplification means is separately controllable.

46. The sound system of claim 44 wherein each of the loudspeaker means is separately controllable.

47. The sound system of claim 43, wherein two or more of the plurality of separately received audio signals can be combined to share a designated amplification means or loudspeaker means.

48. A method of recording and reproducing sound comprising the steps of:
separately capturing a plurality of sounds from a plurality of sound sources, each sound source having unique sonic characteristics;
designating each of the plurality of received sounds based on the sonic characteristics of each of the corresponding sound sources;
converting each of the plurality of sounds to an audio signal;
separately recording each of the audio signals;
separately retrieving each of the audio signals;
separately amplifying each of the plurality of audio signals; and
separately supplying each of the audio signals to a loudspeaker system to reproduce the original plurality of sounds.

49. The method of claim 48 further comprising the step of separately controlling each of the amplification means.

50. The method of claim 48 further comprising the step of separately controlling each of the loudspeaker means.

51. The method of claim 48, further comprising the step of combining two or more of the plurality of separately received audio signals to share a designated amplifier means or loudspeaker means.

52. A method of sound reproduction comprising the steps of:
separately capturing a plurality of sounds from a plurality of sound sources,
each sound source having unique sonic characteristics;
designating each of the plurality of received sounds based on the sonic
characteristics of each of the corresponding sound sources;
converting each of the plurality of sounds to an audio signal;
separately transmitting each of the audio signals without mixing the audio
signals;
separately amplifying each of the plurality of audio signals; and
separately supplying each of the audio signals to a loudspeaker system to
reproduce the original plurality of sounds.

53. The method of claim 52 further comprising the step of separately controlling
each of the amplification means.

54. The method of claim 52 further comprising the step of separately controlling
each of the loudspeaker means.

55. The method of claim 53, further comprising the step of combining two
or more of the plurality of separately transmitted audio signals to share a designated amplifier
means or loudspeaker means.